

***Summit Public Schools*** made high performance design a top priority for Silverthorne

Elementary School from the beginning. "We set out to build a school that would last 100 years," said Superintendent Wes Smith. As a superintendent for fifteen years, Smith has seen too many taxpayer dollars used to repair or replace schools that are only 30 years old. "We can't afford to do that," Smith said. "The fiscally responsible thing for us to do is to build a school that people not only *can* use, but more importantly, will *want* to use for at least 100 years." To make a building work for that long, it has to be efficient and durable, flexible to adapt to changing needs over time, and a positive expression of the community.

Silverthorne Elementary School is designed to serve 430 students in the mountain town of Silverthorne, 70 miles west of Denver. The 62,500 square foot school is scheduled to open Fall 2004.

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# Peak Performance for Silverthorne Elementary



## ***Does High Performance Cost More?***

The construction budget for the school is \$9 million, or about \$145 per square foot. Considering that mountain communities pay about \$25 per square foot more than their counterparts on the Front Range, the budget is typical for Colorado schools.

## ***Daylighting***

"Our design team's goal is for daylighting to provide most all of the light needed in classrooms, even on overcast days," said Mike Arnold, Director of Operations and Maintenance. In addition to ample windows, daylight is directed to illuminate the back wall of each classroom to fill classrooms with light and keep the electric lights turned off. A

scale model of the daylighting design was analyzed by a daylighting laboratory.

## ***Fresh Air, Naturally***

"Operable classroom windows give us high marks from teachers," said Mike Arnold, "and provide natural ventilation." On warm days, outdoor air enters through the windows and rises to



**"We're building a school that will save about 40% on utility bills, will last 100 years, and can be built with a typical school construction budget."**

**- Wes Smith, Superintendent**

# A High Performance Design Success Story

## PROJECT DETAILS

**Facility:** Summit Public Schools, Silverthorne Elementary, grades K-5

**Facility Size:** 430 students, 62,500 square feet

**Facility Location:** Town of Silverthorne, 70 miles west of Denver, school elevation 9,100 feet

**Schedule:** Design 2002, ground-breaking Spring 2003, open Fall 2004

**Procurement:** RFQ specified sustainable design as a high priority and requested a design team that could include sustainable design features within the existing budget.

**Project Budget:** \$9.3 million or \$148 per square foot (within typical range of construction costs for schools in Summit County).

**Energy and Water Cost Savings:** \$27,300 per year projected, compared to code-compliant design

### Energy Efficient Features:

- Daylighting with 2-story light shafts
- High performance low-e glazing
- Natural ventilation and CO<sub>2</sub> monitors
- Movable interior light shelf to allow year-round glare control

### Contact:

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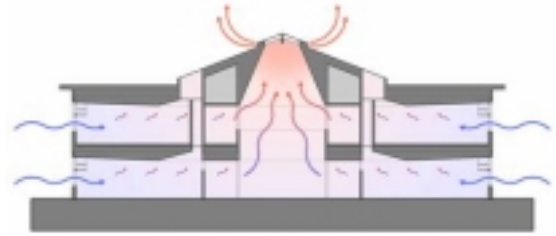
### Contact us!

The Rebuild Colorado program of the Governor's Office of Energy Management offers services and resources to school districts and other state and local governments.

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the top floor atria where it's vented by exhaust fans.

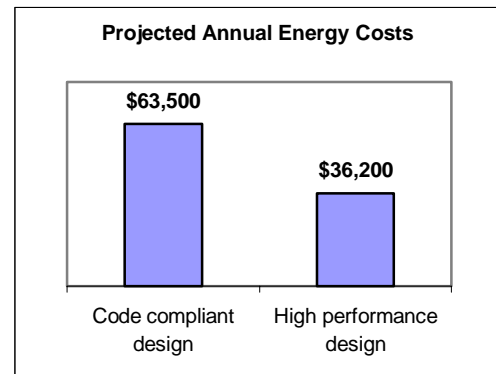
When windows are closed, efficient mechanical ventilation will be used. Variable air volume air handlers deliver fresh air to the rooms, regulated by carbon monoxide monitors to ensure adequate ventilation. This design also keeps air handler noise away from the classrooms, improving the acoustics in the classrooms.



*Natural ventilation was designed in from the beginning. Fresh air enters via operable windows, and as it warms it rises and is vented out of the exhaust fans at the top of the atria.*

## Energy efficiency

At an elevation of 9,100 feet, the extreme climate was a factor in the design. By optimizing the building orientation, using daylighting to the fullest, increasing insulation levels, and using natural ventilation, the team developed a design that will save the district \$27,000 per year that would otherwise be spent on high utility bills.



*The high performance design saves an estimated \$27,300 annually, based on analysis provided by Rebuild Colorado.*

**"One of the most important things we can do is to create a motivating, inspiring place where teachers and students thrive."**  
- Eric Miller, Boora Architects